

REMARKS

Claims 1-10 are pending in the present application, of which claim 1 is the sole independent claim. Claims 1, 6 and 7 have been amended; support is found on page 2, line 29 (claim 1); page 3, line 23 (claim 6); and page 3, lines 5-10 (claim 7). No claims have been canceled or added.

Claims 1, 2, 8 and 9 were rejected under 35 U.S.C. §103(a) over Hinckley et al. (U.S. Pat. No. 3,167,515; hereinafter "Hinckley") in view of Barbe et al. (WO 90/11403; hereinafter "Barbe"), and claims 3-7 and 10 over Hinckley and Barbe, and further in view of Ellis et al. Applicants respectfully traverse these rejections.

Hinckley states that the pH of his borohydride/metabisulfite mixture must be at least 10 to obtain good results (Col. 1, lines 33-44 and 62-66), and in practice Hinckley adjusted and maintained his mixtures at a pH of 11 (Col. 1, line 72 to Col. 2, line 4). In contrast, the present invention operates at pH values much lower than these. The Declaration filed herewith demonstrates that a mixture of SBH, SBS and NaOH having a (SBS-NaOH)/SBH mole ratio in the claimed range of 4 to 7.8 will have a pH no greater than 8.73 (at a ratio of 4), and as low as about 7.7 at the highest claimed ratio of 7.8. In the Examples of the present application, the actual pH in the pulp slurry is even lower, ranging from 6.1 to 6.7. One skilled in the art could not have predicted from Hinckley that good bleaching results could be obtained using SBH and SBS at lower pH values.

Moreover, the present claims recite that SBH and SBS are combined "in a chemical mixer." There is no indication in Hinckley that good bleaching results could be obtained by mixing the reagents in this type of equipment.

In the interest of clarifying the record, Applicants note that the Office Action states incorrectly that Hinckley discloses a ratio of (moles bisulfite·moles hydroxide)/moles borohydride "from 2.0 to 5.7." The quoted ratio was obtained using the "bisulfite to borohydride" ratio given in Table 1 of Hinckley. However, Hinckley states that he uses 4 moles of metabisulfite (Col. 1, lines 33-38), so it is apparent that the heading of Hinckley's Table 1 should refer to metabisulfite, rather than bisulfite, and that the 4 moles referred to in the first column of the table is 4 moles of metabisulfite. As described in the present application, on page 3, lines 3-4, bisulfite can be generated from metabisulfite, $S_2O_5^{2-}$, as shown in the following equation for the sodium salts:



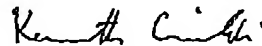
One mole of metabisulfite generates two moles of bisulfite, so it is apparent that the actual molar amount of bisulfite should be twice the number in the table, and thus the (moles bisulfite·moles hydroxide)/moles borohydride ratios actually are approximately double those reflected in Table 1, i.e., from about 4 to about 8.

Claims 1 and 2 were provisionally rejected over claims 1, 3 and 5 of copending Application No. 10/465,433 in view of Hinckley. The Office Action alleges that claim 3 of '433 teaches a ratio of (moles bisulfite-moles hydroxide)/moles borohydride from 0 to 14.4. While it is true that this range of ratios can be obtained by picking and choosing among the ranges of reagents in claim 3, so can many other ranges. One can even derive a negative ratio, as discussed in Applicants' previous response. However, there is no motivation in the reference (i.e., claim 3) to choose the cited range of 0 to 14.4, as required by M.P.E.P. §§ 2143, 2143.01, nor any reasonable expectation of success, as required by M.P.E.P. § 2143.02.

Applicants acknowledge the provisional double patenting rejection over copending Application No. 10/832,182 in view of Barbe, but will not respond at this time, as the '182 application has not yet been examined.

Applicants believe that the foregoing amendments and remarks have placed the claims in condition for allowance, and request that the claims be allowed and passed to issue. However, if the Examiner has any further objections to the application, Applicants respectfully request that the Examiner contact Applicants' undersigned attorney by telephone at (847) 649-3891 to discuss the remaining issues.

Respectfully submitted,



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